The Business Case of Intelligent Packaging

This brochure focuses on the financial sense of utilising radio-frequency identification (RFID) to make products and packaging intelligent. You will find recent research data and an actual business case, which present intelligent packaging from a business value perspective.

RFID in a Retail and distribution context

The most significant ROI comes typically from reducing time and labour costs (ROI 12%). Labour cost savings can be realised through more efficient cycle counts, or by removing the need for manual cycle counts altogether. Other top ROIs can come from improving Backroom to Front-of-Store inventory accuracy (10.3%) and the store replenishment process (10.0%).

The evidence from the retail/whole-sale sector suggests average KPI improvement potential of about 32%. Inventory accuracy, for example, can be increased on average by 25.4%, and profit margin by 60.7%.

Reported ROI by use case

(Source: EKN-Kurt Salmon RFID in Retail Survey (2016))

Retailers and wholesale businesses benefit significantly from RFID: Improvement in KPIs

(Source: EKN-Kurt Salmon RFID in Retail Survey (2016))
Reduced capital tied up in inventory
Money tied up in inventory is separate from other use cases. Access to real-time supply chain data and the resulting better long-term forecasting allows lower stock levels throughout the supply chain.

As an example, a customer had an average finished goods inventory of about EUR 95 million, WACC of 5% and a 2.5% identified inventory level optimisation estimate. Annual direct financial benefit of optimising the inventory level was estimated to be about EUR 120,000 (5% * 2.5% * EUR 95 million).

Improve sales and brand
The EKN-Kurt Salmon RFID in Retail Survey (2016) companies reported that inventory inaccuracy causes lost sales of 8.7% on average. The improvement in accuracy can result in significant sales increase.

With EUR 10 million net sales, and 8.7% lost sales on average due to inaccuracy in inventory, estimated sales gain from intelligent packaging is about EUR 221,000 (EUR 10 million * 8.7% * 25.4%), or 2.21% of net sales.

RFID in a Manufacturing and brand owner context
For manufacturing clients, the focus on RFID utilisation has mostly driven supply chain efficiency. The value sources are presented below with a financial evaluation of the impact. Below is a summary of an actual case, where financial benefits were evaluated.

Project cost = EUR 2.67 million (one time)
- including RFID readers and installation, handheld readers, RFID data IT integration, software control server, solution rollout and design and project management/execution.

Operating cost = EUR 0.39 million (annual)
- including RFID tags, tag application to packages and RFID reader system maintenance.

Key assumptions for NPV calculation: Assumed depreciation time of 3 years, EUR 0.89 million annual depreciation, 20% tax rate, discount rate 5%, no terminal value and holding period 5 years.

Cost benefit analysis for a manufacturing company

<table>
<thead>
<tr>
<th>Source of improvement</th>
<th>Annual EBIT increase (EUR)</th>
<th>% of total EBIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency of in- and outbound processes</td>
<td>640,000</td>
<td>1.24%</td>
</tr>
<tr>
<td>Increased sales</td>
<td>390,000</td>
<td>0.76%</td>
</tr>
<tr>
<td>Improved S&amp;OP - production planning</td>
<td>130,000</td>
<td>0.25%</td>
</tr>
<tr>
<td>Optimized inventory levels</td>
<td>120,000</td>
<td>0.23%</td>
</tr>
<tr>
<td>Improved S&amp;OP - warehouse planning</td>
<td>110,000</td>
<td>0.21%</td>
</tr>
<tr>
<td>Others</td>
<td>150,000</td>
<td>0.29%</td>
</tr>
<tr>
<td>Total</td>
<td>1,540,000</td>
<td>2.98%</td>
</tr>
</tbody>
</table>

Year | Annual costs | Annual benefits | Depreciation tax shield | Discounted CF | Cumulative discounted CF |
0    | -2,670,000   | -2,760,000       |                        |              |                         |
1    | 390,000      | 320,000          | 178,000                 | 102,857       | -2,567,143               |
2    | 390,000      | 1,540,000        | 178,000                 | 1,204,535     | -1,362,608               |
3    | 390,000      | 1,540,000        | 178,000                 | 1,147,176     | -215,431                 |
4    | 390,000      | 1,540,000        | 1,540,000               | 946,108       | 730,676                  |
5    | 390,000      | 1,540,000        | 901,055                 | 1,631,732     |                          |

Assuming that in the first year, only 50% of the EBIT improvement is realised for in- and outbound processes, with other benefits not yet realised.

Contact us for more information:
www.storaenso.com/intelligentpackaging

Radio-frequency identification (RFID) tags come in various shapes and sizes, depending on their application. Pictured Stora Enso’s Bracket RFID tag.